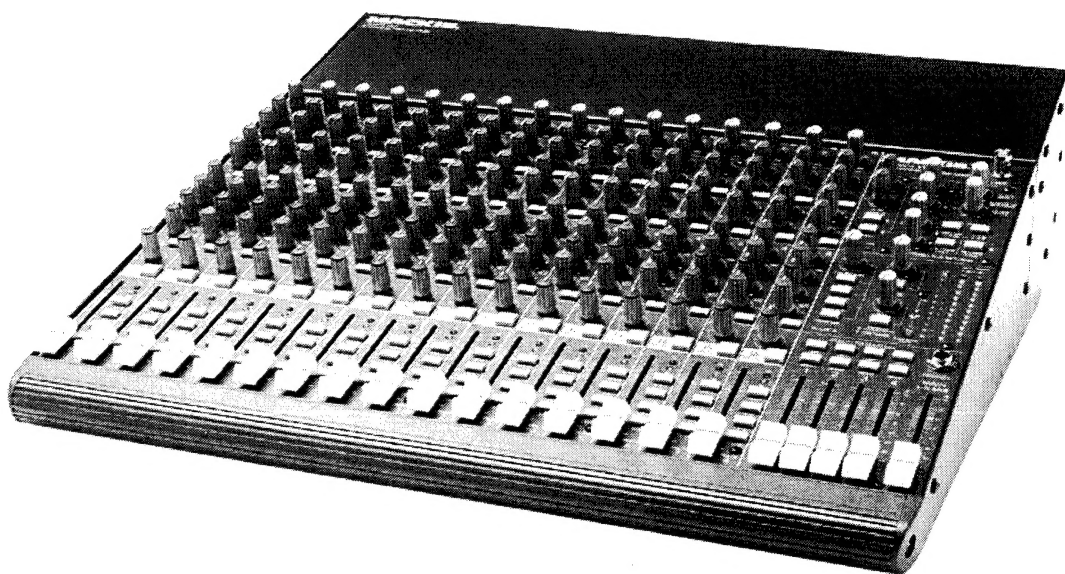


## 1604-VLZ™

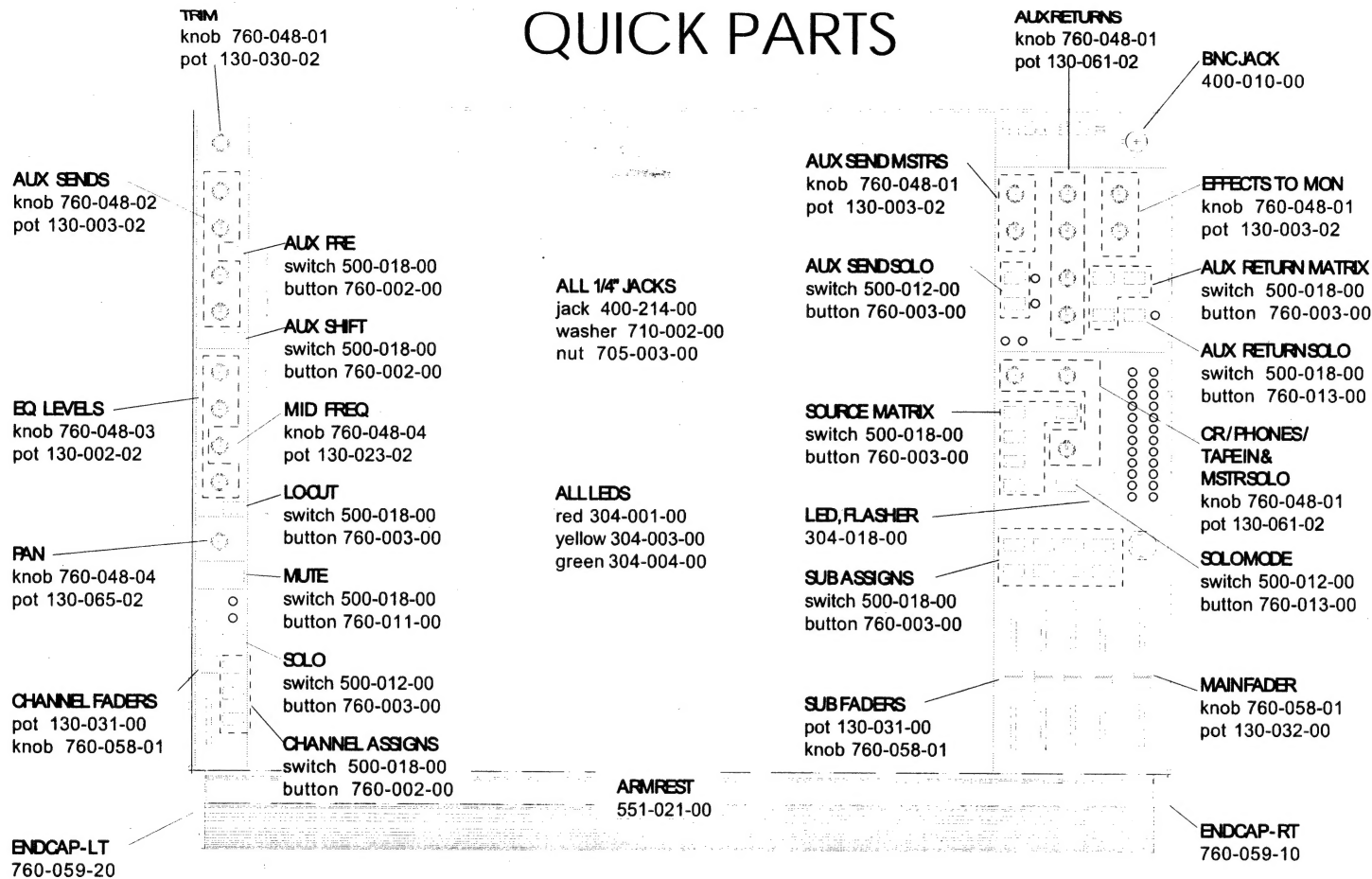
### 16 CHANNEL MIC/LINE MIXER



## SERVICE MANUAL

<b>Contents</b>	<b>Pg.</b>
Quick Parts	1
Block Diagram	2
Channel Schematic	3
Pod Section Schematics	4-6
Pod Section PCB Layout	7-8
Main Section Schematics	9-14
Main Section PCB Layout	15
Jumper Location and Pinout	16
Power Supply	17

# QUICK PARTS



## POD COMPONENTS...

**ALL 1/4" JACKS**  
jack 400-214-00  
washer 710-002-00  
nut 705-003-00

**FEMALE XLR INPUT**  
400-223-00

**RCA INPUT**  
400-022-00

**IEC RECEPTACLE**  
400-009-00

**PWR SWITCH**  
500-013-00

**PHANTOM SW**  
500-016-00

**MONO OUTPUT**  
knob 760-007-00  
pot 130-062-02

## INTERNAL PARTS...

**TRANSFORMER**  
100V 080-008-02  
120V 080-008-00  
230V 080-008-01

**PCB-POD**  
055-219-00-01

**PCB-MAIN**  
055-220-00-01

**PCB-PWR**  
055-066-00

**MISC...**  
**ROTO RACK EARS**  
L - 550-179-00  
R - 550-180-00  
**RACK EARS**  
550-177-00 (X2)  
**AC LINECORD**  
(120V) 640-001-00

**OWNER'S MANUAL**  
820-034-01

## SCREW PLACEMENT...

**TOP ALLEN SCREWS**  
700-011-00

**SIDE SCREWS**  
700-006-00

**XLR SCREWS**  
700-005-00

**CHASSIS BOTTOM**  
550-173-00

**POD BOTTOM**  
550-175-00

**BOTTOM SCREWS**  
701-002-00

**END CAP SCREWS**  
700-010-06

**STAR GROUND**  
screw 700-031-01  
nut 705-001-00

**CHASSIS TOP**  
550-172-10

**POD TOP**  
550-174-00

**SIDE POD SCREWS**  
700-004-00

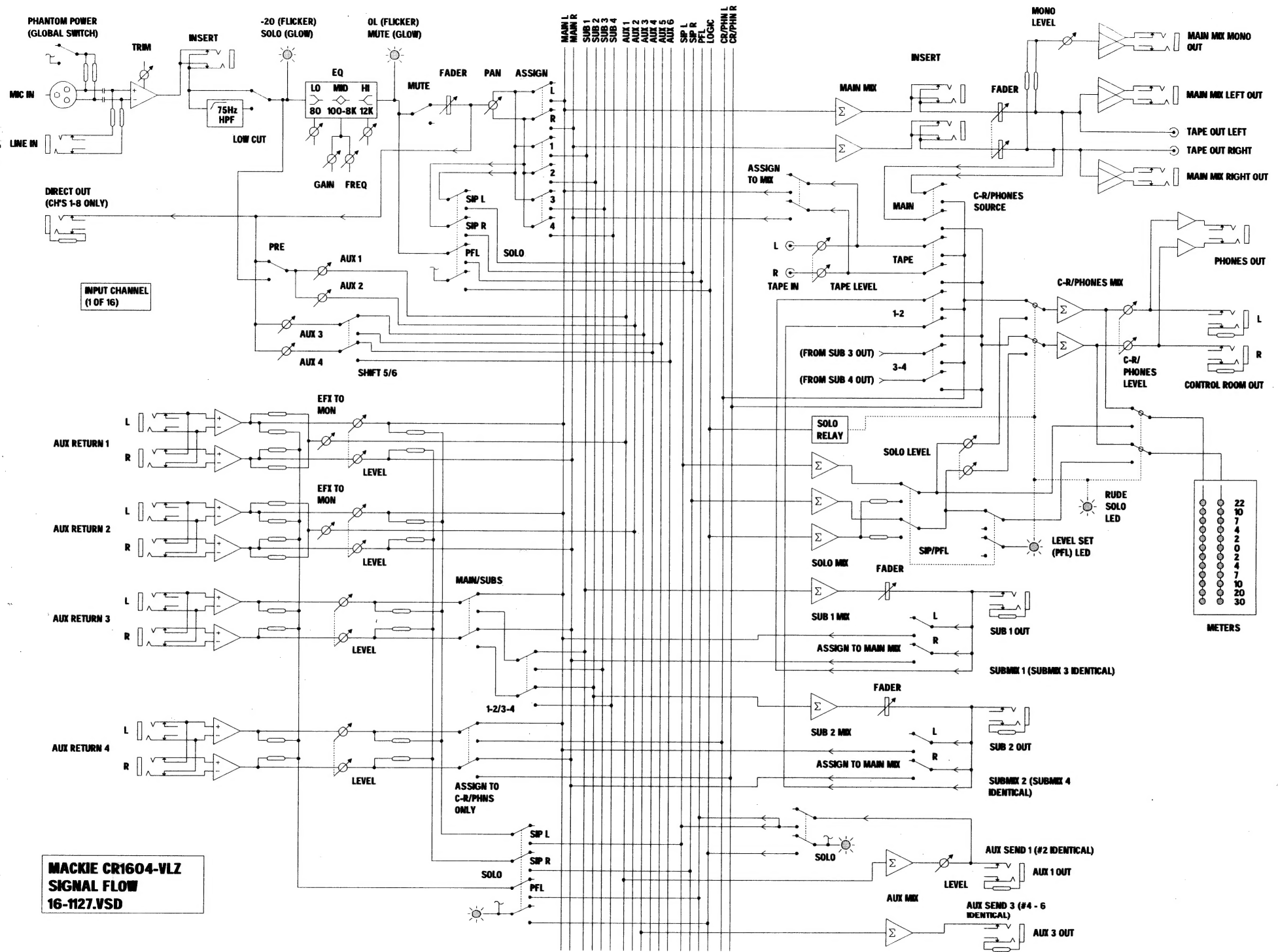
**FLATE SCREWS**  
700-010-00

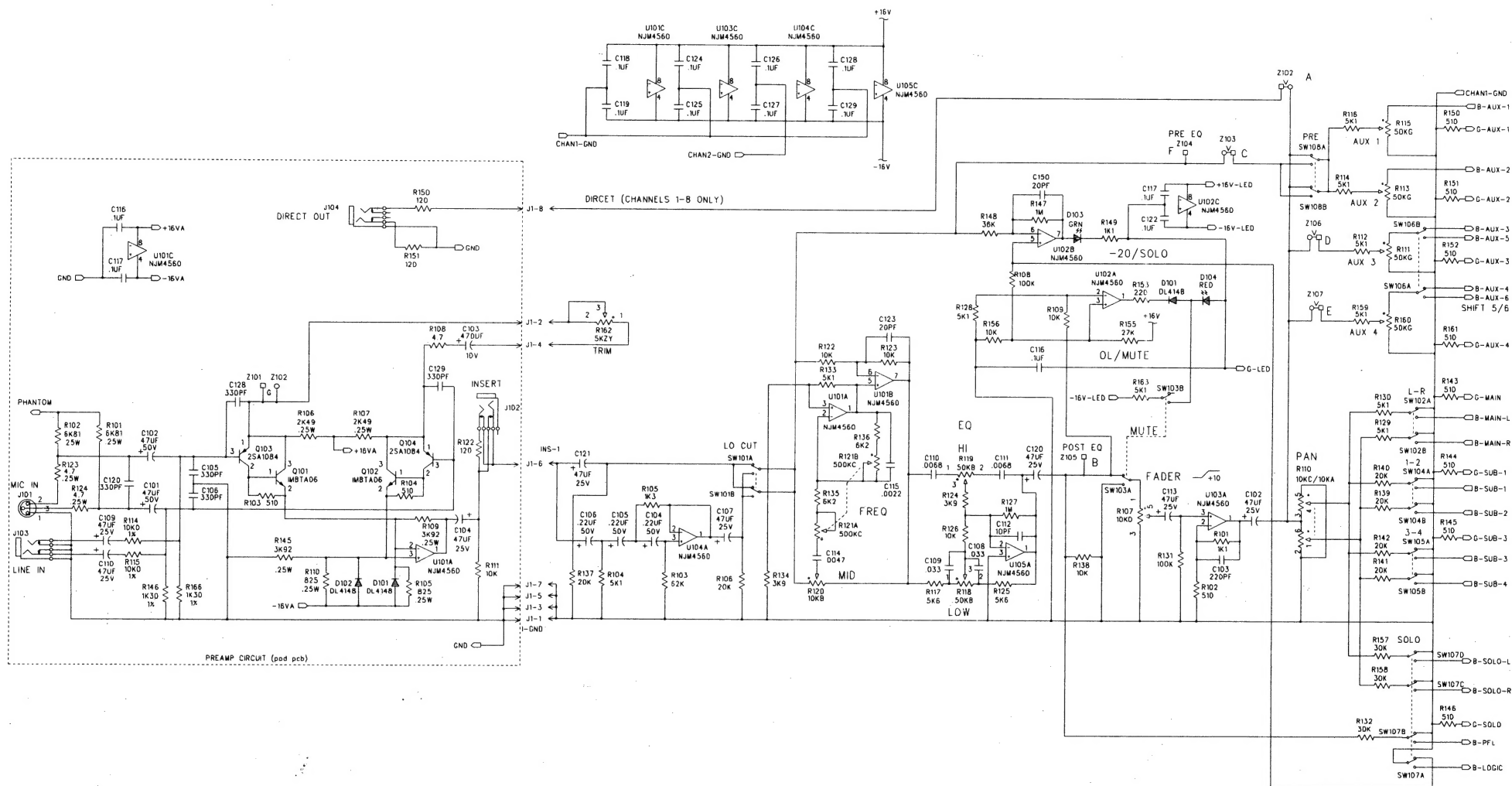
**CABLE PLATE**  
550-176-00

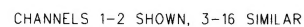
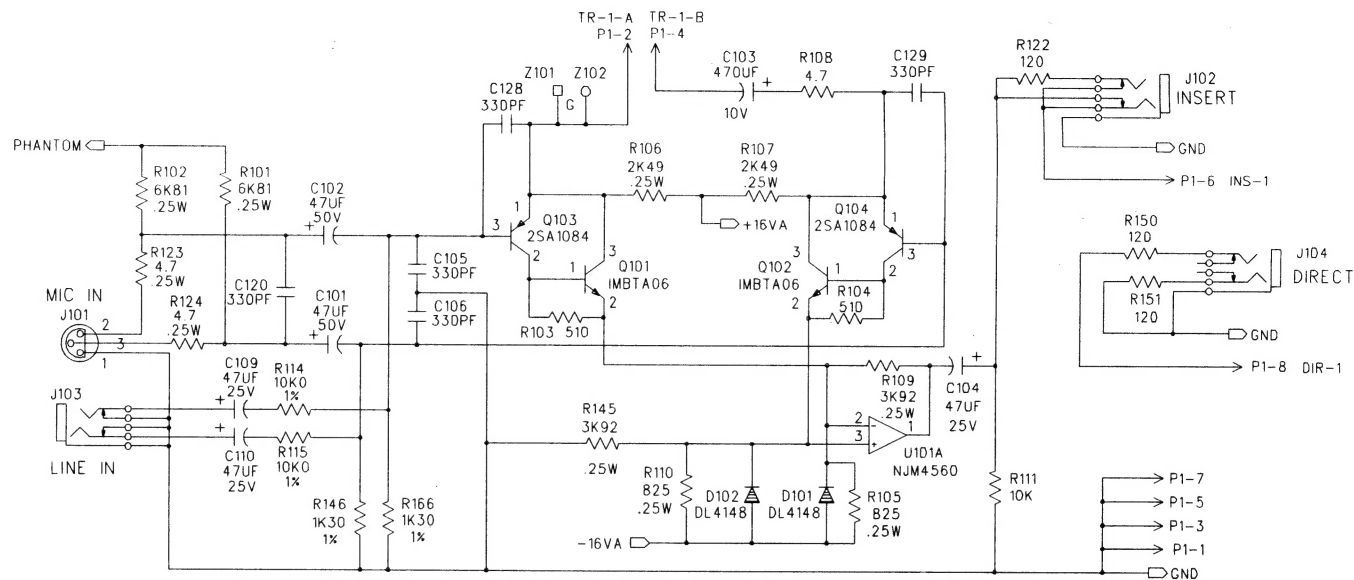
**BUMFON**  
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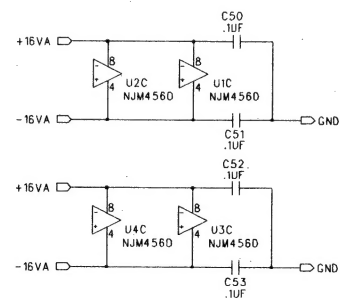
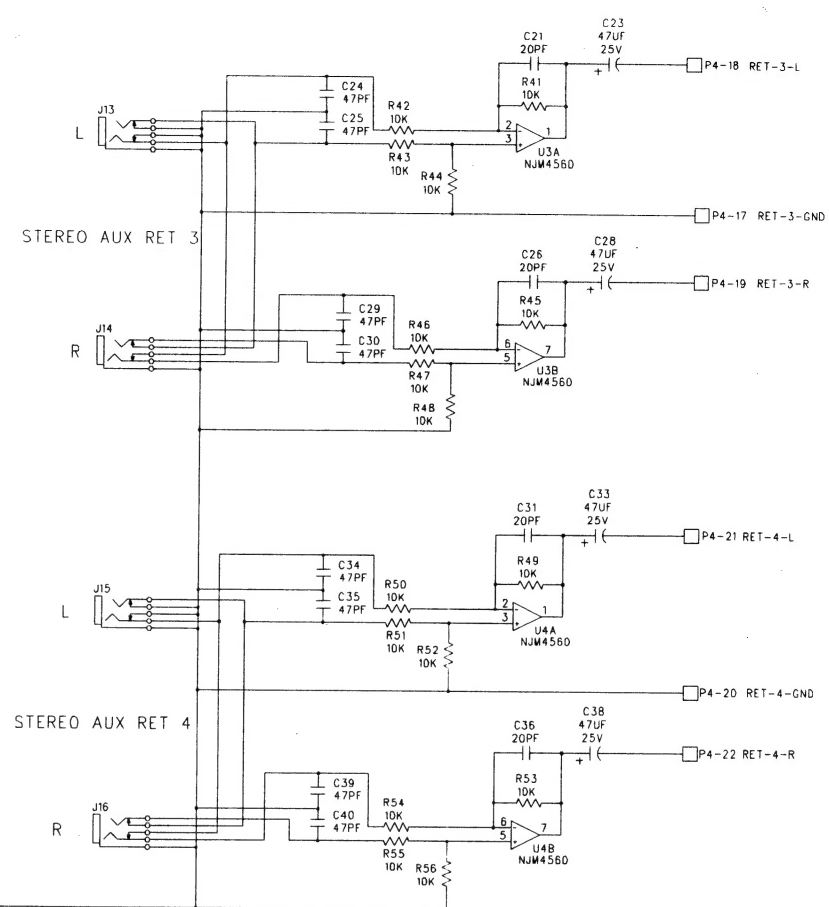
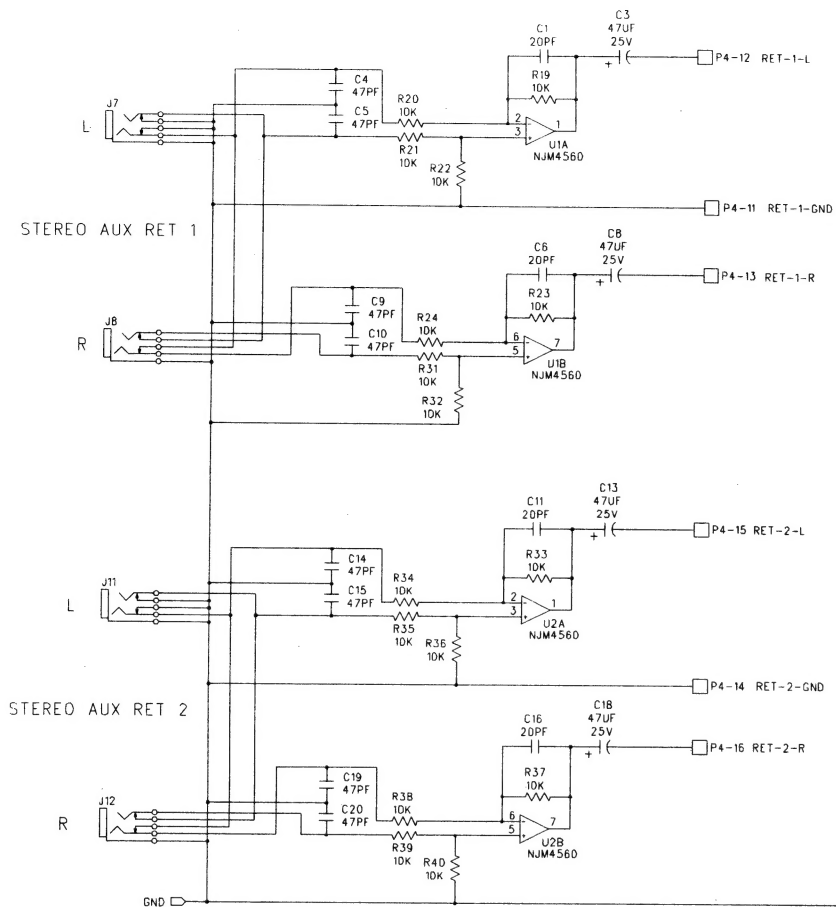
05/99

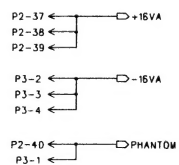
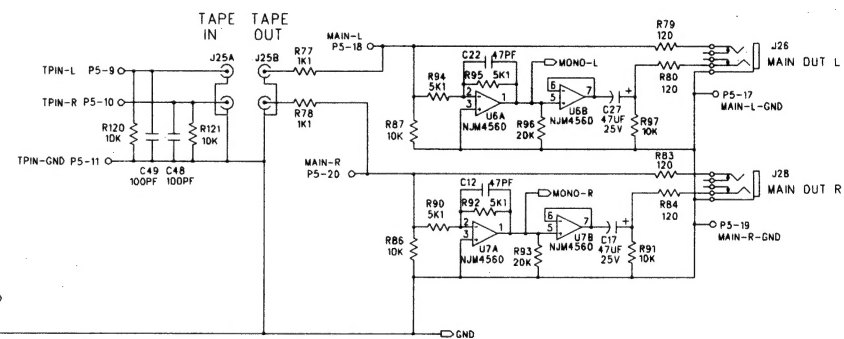
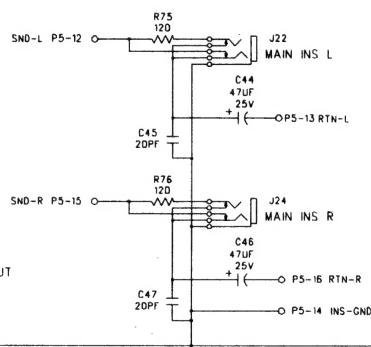
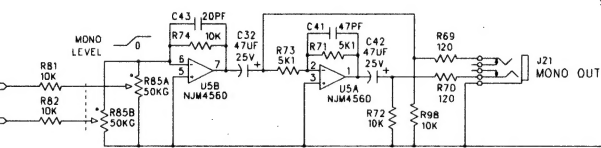
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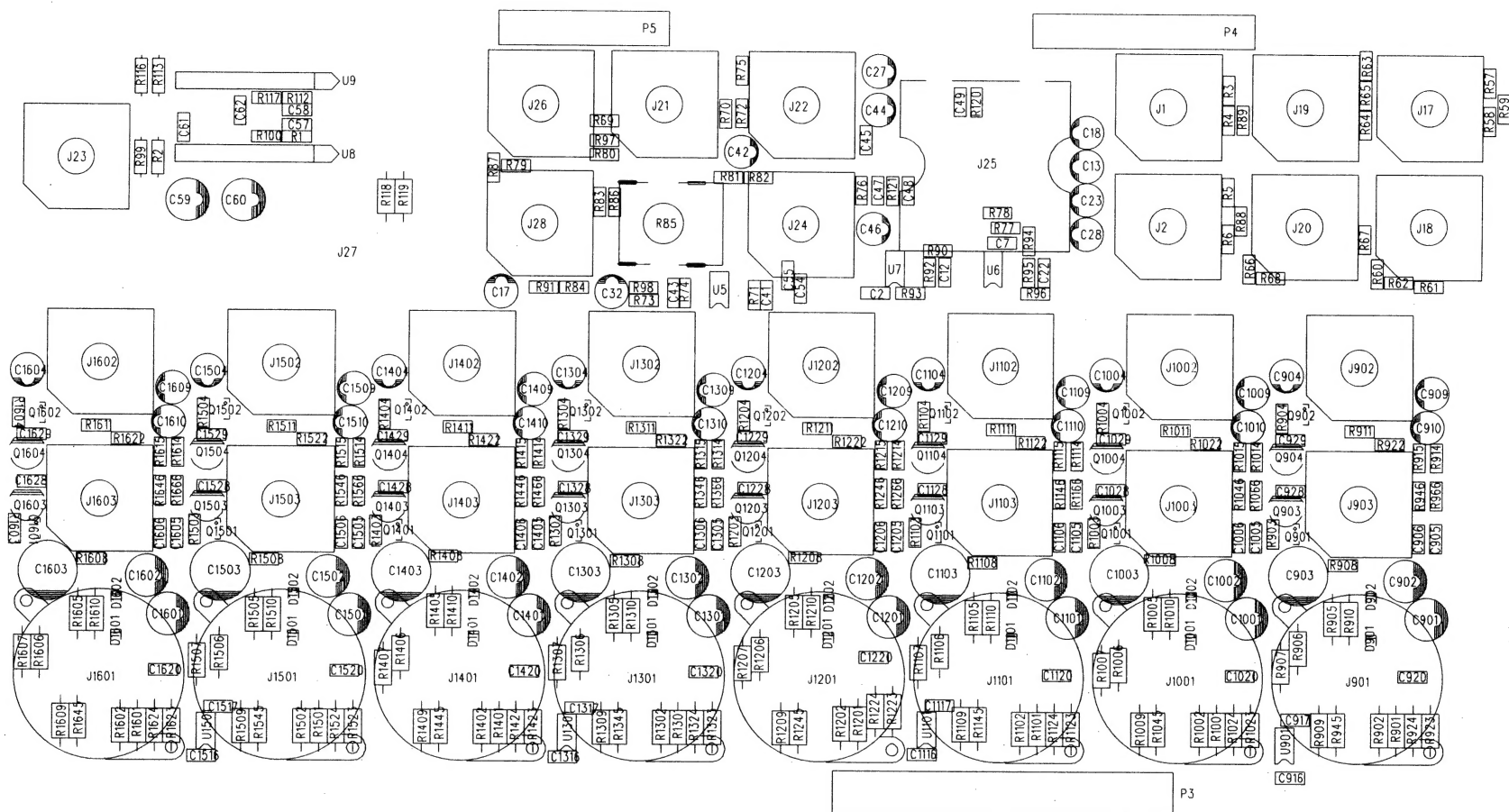










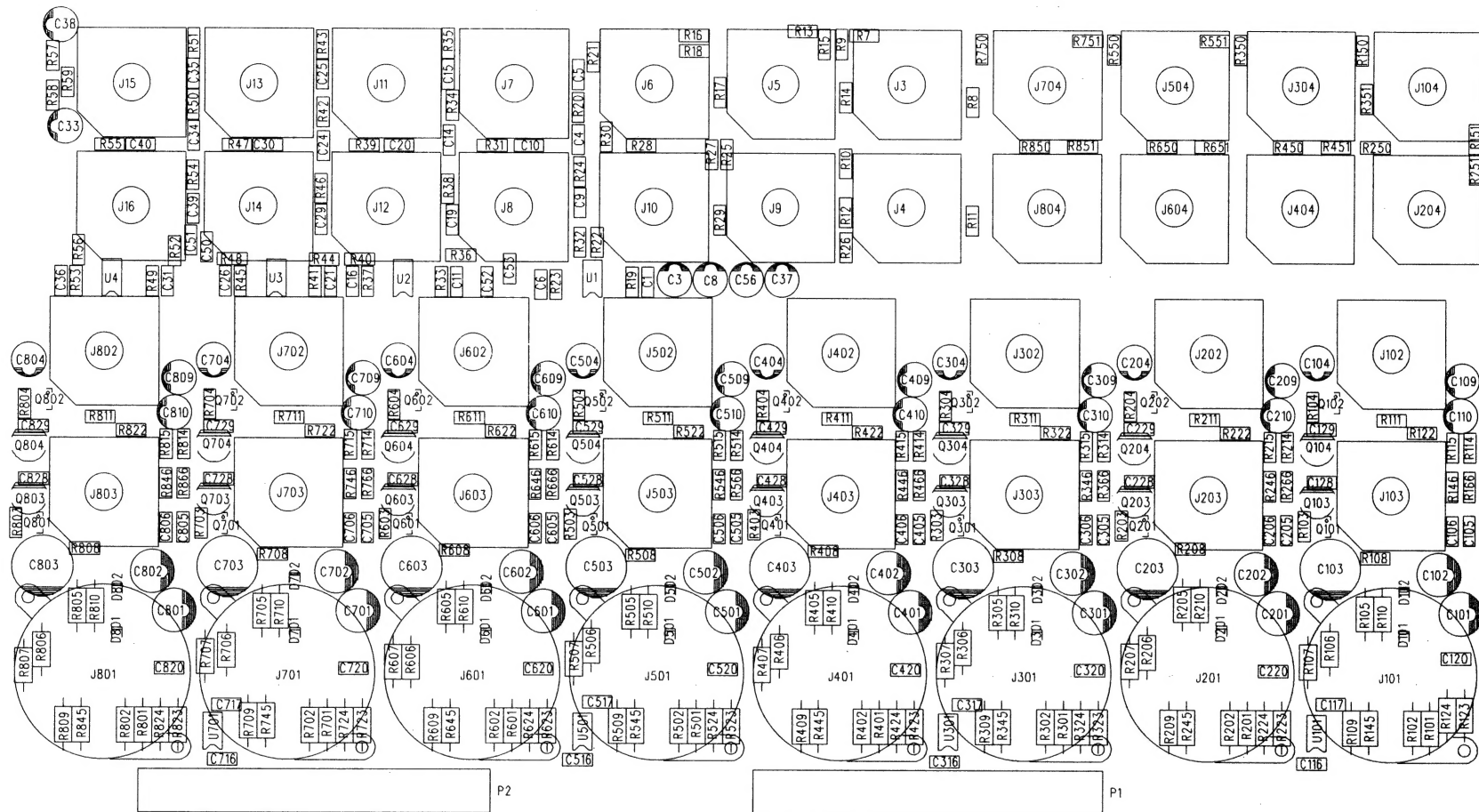


REV C

MACKIE.

CR1604-VLZ POD PCB LAYOUT, LEFT HALF





REV C

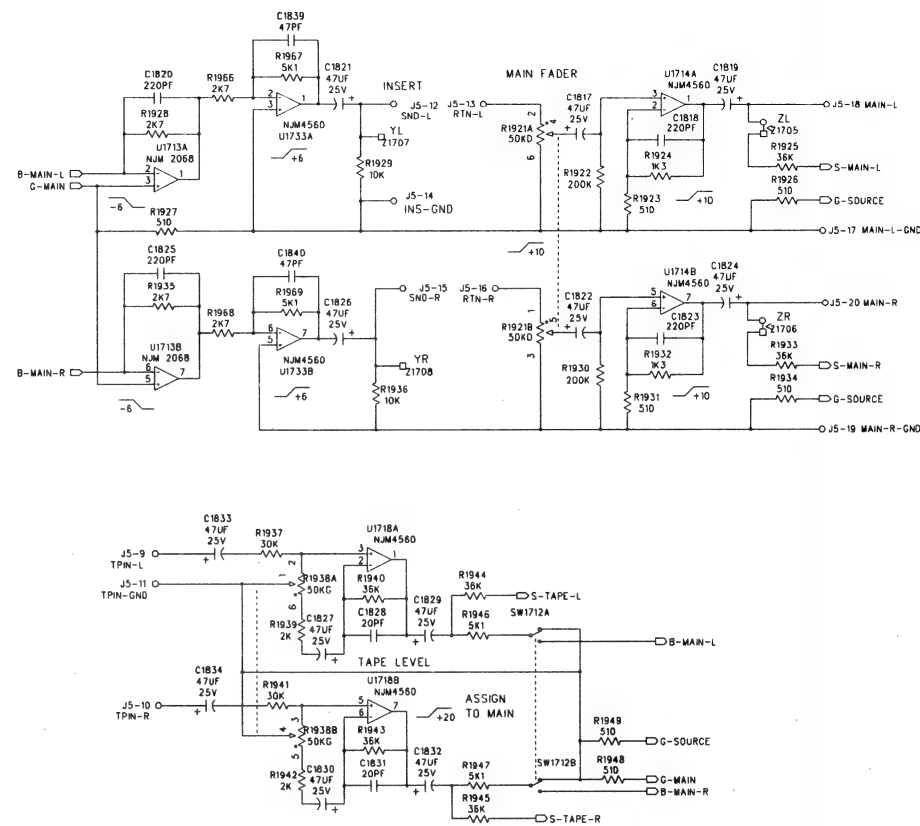
**MACKIE.**

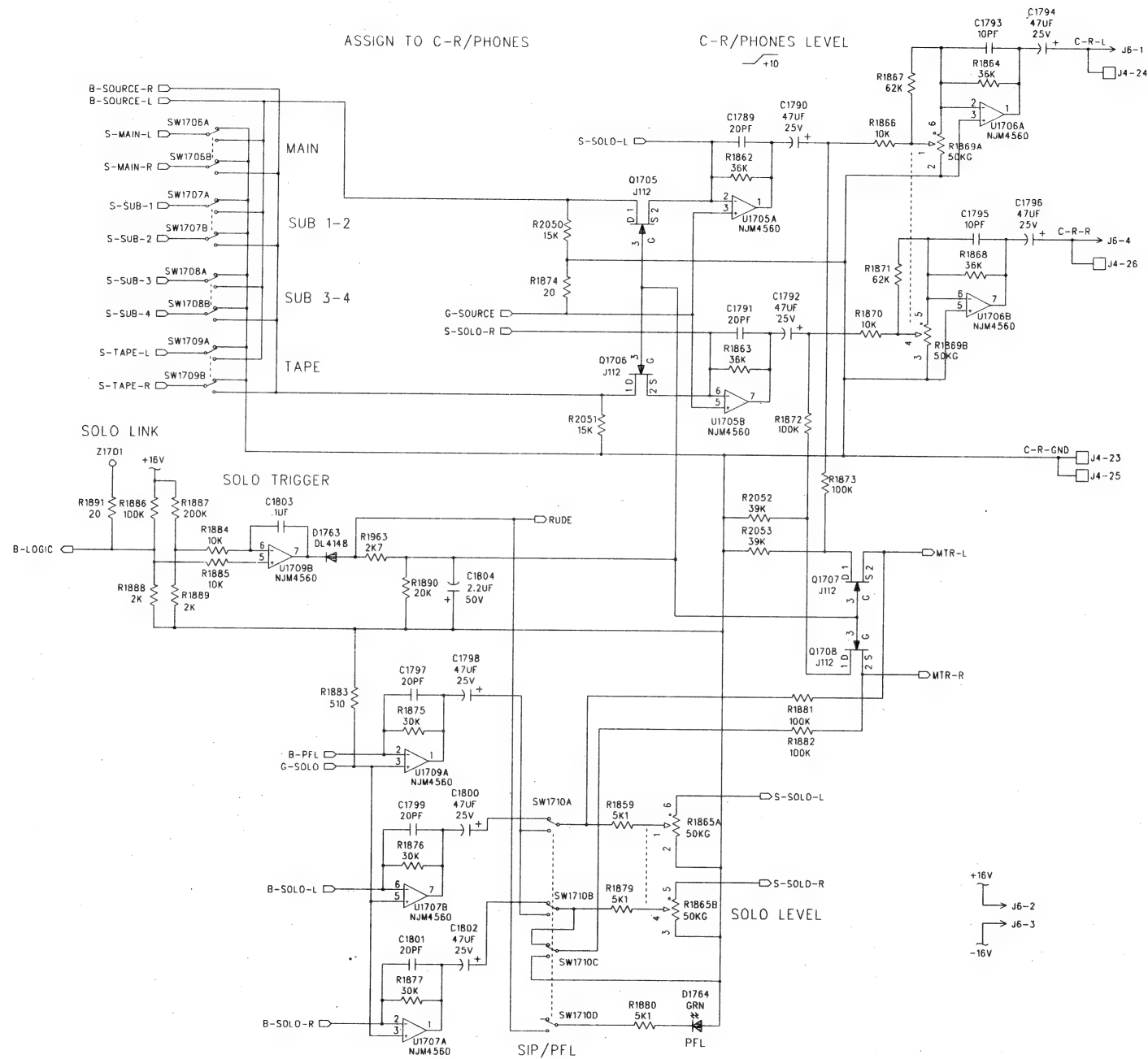
**CR1604-VLZ POD PCB LAYOUT, RIGHT HALF**

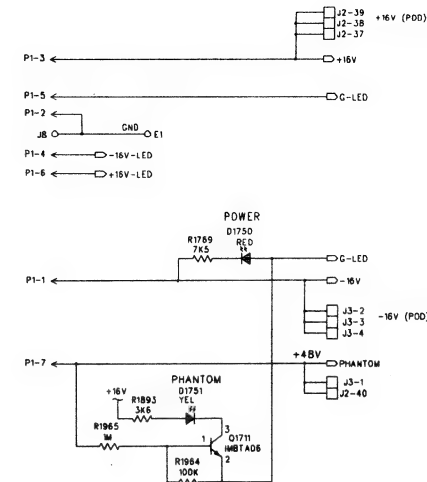
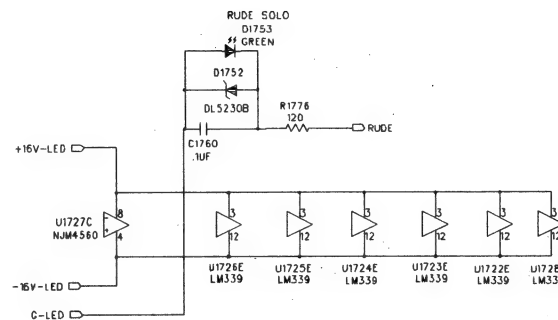
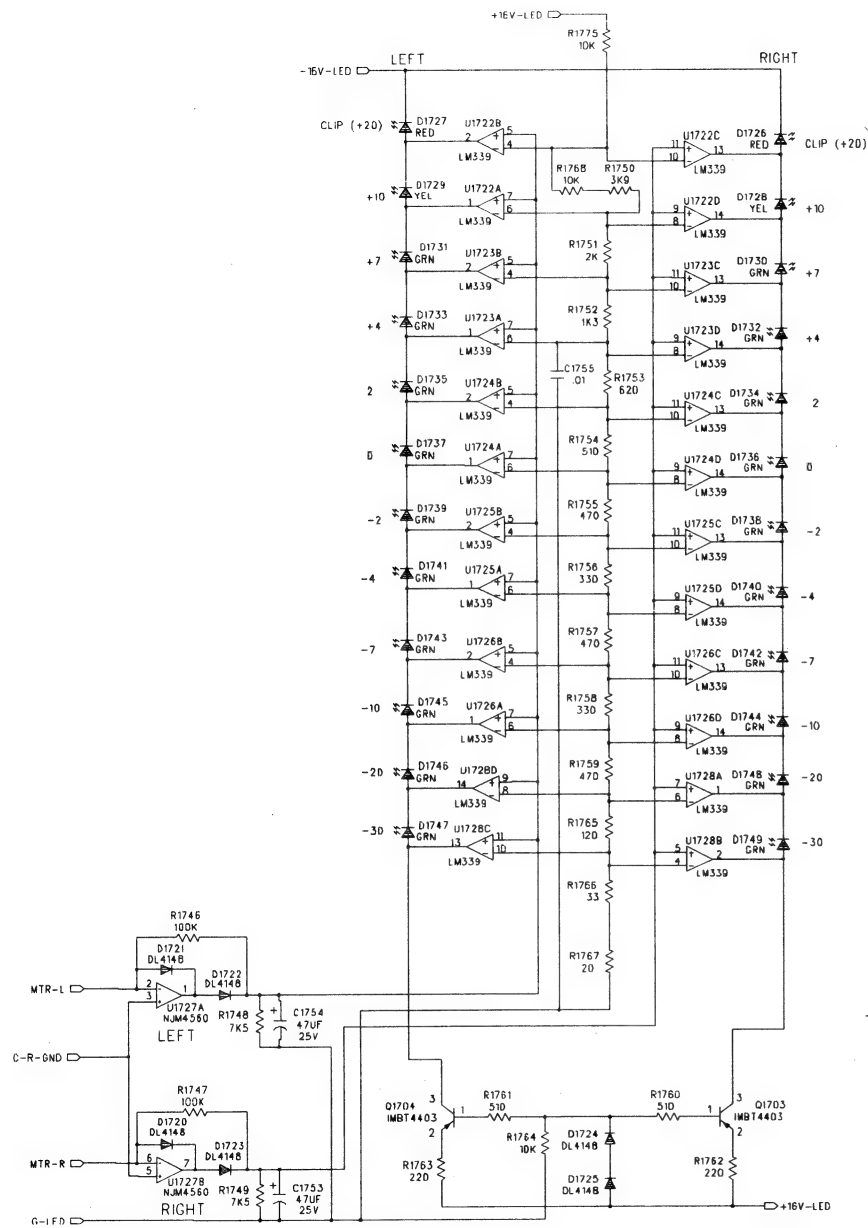




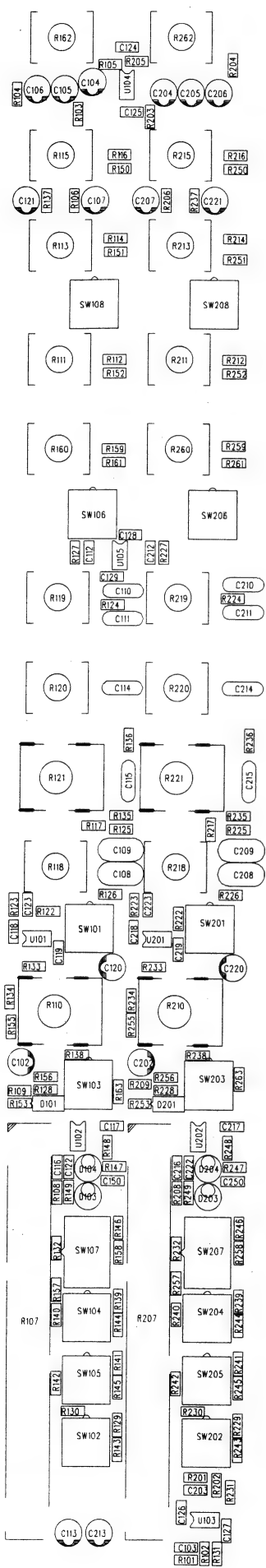








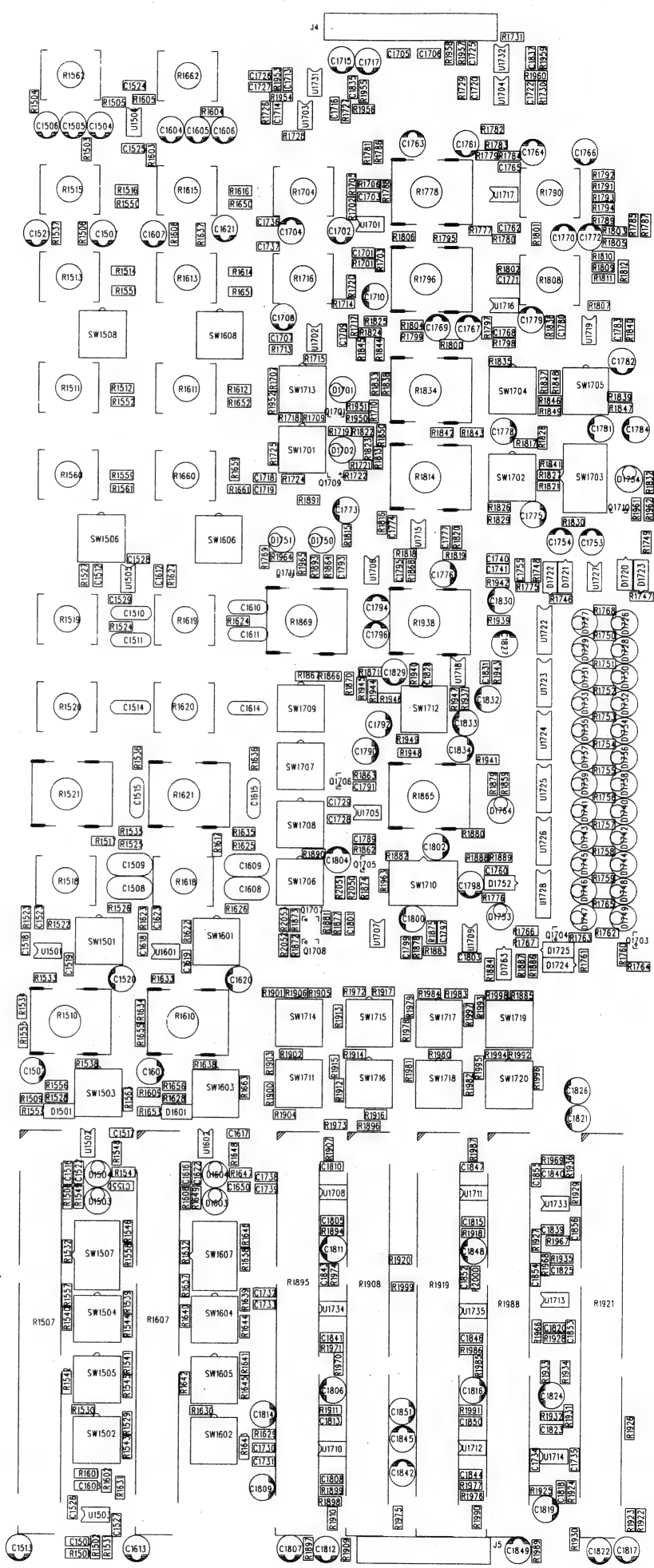
**MACKIE.**  
CR1604-VLZ MAIN SECTION, SHEET 6



**MACKIE**  
CR1604-VLZ

MAIN BOARD  
PCB LAYOUT  
REV B

CHANNELS 3-14  
NOT SHOWN,  
REFER TO  
CHANNELS 1-2.





**MACKIE™**

# CR1604-VLZ MAIN PCB

## JUMPER LOCATION AND PINOUT

**J1**

40 PIN

MAIN CABLE PART # 040-076-00  
POD CABLE PART # 040-073-00

**J2**

40 PIN

MAIN CABLE PART # 040-076-00  
POD CABLE PART # 040-073-00

**J3**

40 PIN

MAIN CABLE PART # 040-076-00  
POD CABLE PART # 040-073-00

**P1**

POWER DISTRIBUTION  
CABLE ASSY PART # 040-078-00

**J4**

26 PIN

MAIN CABLE PART # 040-074-00  
POD CABLE PART # 040-071-00

**J5**

20 PIN

MAIN CABLE PART # 040-075-00  
POD CABLE PART # 040-072-00

**J1**

CHANNEL 1 GND	1	2	CHANNEL 1 TRIM A
CHANNEL 1 GND	3	4	CHANNEL 1 TRIM B
CHANNEL 1 GND	5	6	CHANNEL 1 IN
CHANNEL 1 GND	7	8	CHANNEL 1 DI OUT
CHANNEL 2 GND	9	10	CHANNEL 2 TRIM A
CHANNEL 2 GND	11	12	CHANNEL 2 TRIM B
CHANNEL 2 GND	13	14	CHANNEL 2 IN
CHANNEL 2 GND	15	16	CHANNEL 2 DI OUT
CHANNEL 3 GND	17	18	CHANNEL 3 TRIM A
CHANNEL 3 GND	19	20	CHANNEL 3 TRIM B
CHANNEL 3 GND	21	22	CHANNEL 3 IN
CHANNEL 3 GND	23	24	CHANNEL 3 DI OUT
CHANNEL 4 GND	25	26	CHANNEL 4 TRIM A
CHANNEL 4 GND	27	28	CHANNEL 4 TRIM B
CHANNEL 4 GND	29	30	CHANNEL 4 IN
CHANNEL 4 GND	31	32	CHANNEL 4 DI OUT
CHANNEL 5 GND	33	34	CHANNEL 5 TRIM A
CHANNEL 5 GND	35	36	CHANNEL 5 TRIM B
CHANNEL 5 GND	37	38	CHANNEL 5 IN
CHANNEL 5 GND	39	40	CHANNEL 5 DI OUT

**J2**

CHANNEL 6 GND	1	2	CHANNEL 6 TRIM A
CHANNEL 6 GND	3	4	CHANNEL 6 TRIM B
CHANNEL 6 GND	5	6	CHANNEL 6 IN
CHANNEL 6 GND	7	8	CHANNEL 6 DI OUT
CHANNEL 7 GND	9	10	CHANNEL 7 TRIM A
CHANNEL 7 GND	11	12	CHANNEL 7 TRIM B
CHANNEL 7 GND	13	14	CHANNEL 7 IN
CHANNEL 7 GND	15	16	CHANNEL 7 DI OUT
CHANNEL 8 GND	17	18	CHANNEL 8 TRIM A
CHANNEL 8 GND	19	20	CHANNEL 8 TRIM B
CHANNEL 8 GND	21	22	CHANNEL 8 IN
CHANNEL 8 GND	23	24	CHANNEL 8 DI OUT
CHANNEL 9 GND	25	26	CHANNEL 9 TRIM A
CHANNEL 9 GND	27	28	CHANNEL 9 TRIM B
CHANNEL 9 GND	29	30	CHANNEL 9 IN
CHANNEL 10 GND	31	32	CHANNEL 10 TRIM A
CHANNEL 10 GND	33	34	CHANNEL 10 TRIM B
CHANNEL 10 GND	35	36	CHANNEL 10 IN
+16 V	37	38	+16 V
+16 V	39	40	+48V PHANTOM PWR

**J3**

+48V PHANTOM PWR	1	2	-16V
-16V	3	4	-16V
CHANNEL 11 GND	5	6	CHANNEL 11 TRIM A
CHANNEL 11 GND	7	8	CHANNEL 11 TRIM B
CHANNEL 11 GND	9	10	CHANNEL 11 IN
CHANNEL 12 GND	11	12	CHANNEL 12 TRIM A
CHANNEL 12 GND	13	14	CHANNEL 12 TRIM B
CHANNEL 12 GND	15	16	CHANNEL 12 IN
CHANNEL 13 GND	17	18	CHANNEL 13 TRIM A
CHANNEL 13 GND	19	20	CHANNEL 13 TRIM B
CHANNEL 13 GND	21	22	CHANNEL 13 IN
CHANNEL 14 GND	23	24	CHANNEL 14 TRIM A
CHANNEL 14 GND	25	26	CHANNEL 14 TRIM B
CHANNEL 14 GND	27	28	CHANNEL 14 IN
CHANNEL 15 GND	29	30	CHANNEL 15 TRIM A
CHANNEL 15 GND	31	32	CHANNEL 15 TRIM B
CHANNEL 15 GND	33	34	CHANNEL 15 IN
CHANNEL 16 GND	35	36	CHANNEL 16 TRIM A
CHANNEL 16 GND	37	38	CHANNEL 16 TRIM B
CHANNEL 16 GND	39	40	CHANNEL 16 IN

**P1**

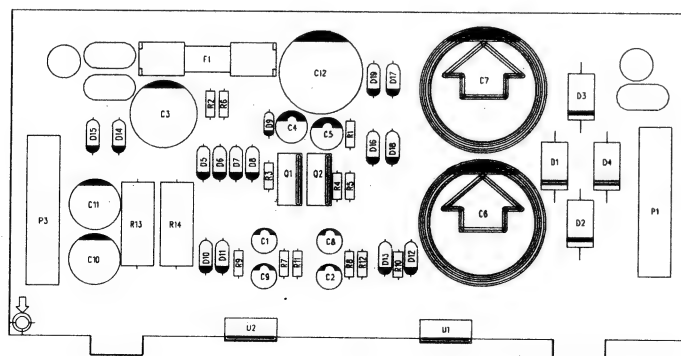
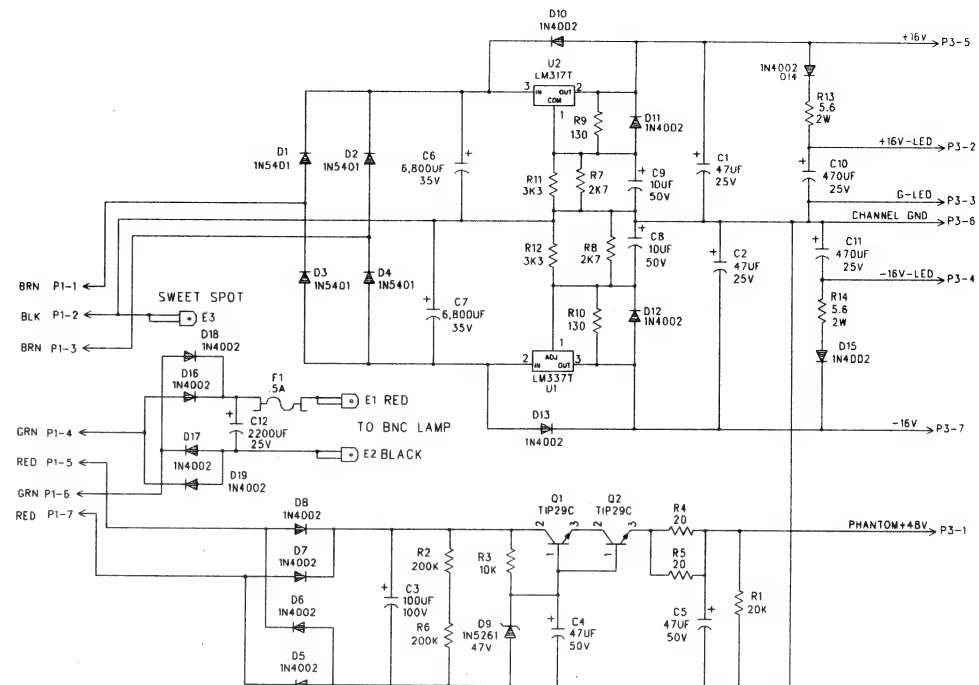
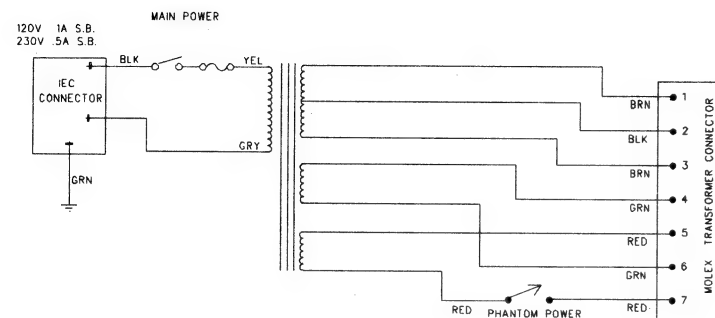
7	+48V PHANTOM
6	+16V LED
5	GND LED
4	-16V LED
3	+16V
2	GND
1	-16V

**J4**

AUX 1 SEND GND	1	2	AUX 1 SEND
AUX 2 SEND GND	3	4	AUX 2 SEND
AUX 3/5 SEND GND	5	6	AUX 3 SEND
AUX 5 SEND	7	8	AUX 4/6 SEND GND
AUX 4 SEND	9	10	AUX 6 SEND
AUX RETURN 1 GND	11	12	AUX RETURN 1 LEFT
AUX RETURN 1 RIGHT	13	14	AUX RETURN 2 GND
AUX RETURN 2 LEFT	15	16	AUX RETURN 2 RIGHT
AUX RETURN 3 GND	17	18	AUX RETURN 3 LEFT
AUX RETURN 3 RIGHT	19	20	AUX RETURN 4 GND
AUX RETURN 4 LEFT	21	22	AUX RETURN 4 RIGHT
CONTROL ROOM GND	23	24	CONTROL ROOM LEFT
CONTROL ROOM GND	25	26	CONTROL ROOM RIGHT

**J5**

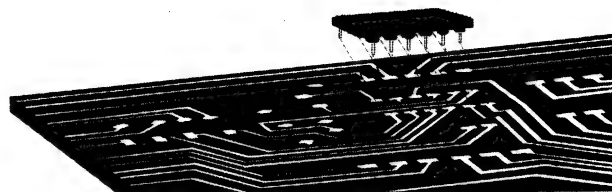
SUB 1 OUT	1	2	SUB 1 GND
SUB 2 OUT	3	4	SUB 2 OUT
SUB 3 OUT	5	6	SUB 3 GND
SUB 4 OUT	7	8	SUB 4 GND
TAPE IN LEFT	9	10	TAPE IN RIGHT
TAPE IN GND	11	12	LEFT MAIN INS SEND
LEFT MAIN INS RETURN	13	14	INSERT GND
RIGHT MAIN INS RTN	15	16	RIGHT MAIN INS SEND
MAIN L GND	17	18	MAIN L TO POD
MAIN R GND	19	20	MAIN R TO POD



**MACKIE.**

**CR1604-VLZ  
POWER SUPPLY**

# MACKIE®



## THE MACKIE FIXER • MACKIE DESIGNS SERVICE NEWS

### 1604-VLZ Auxiliary modifications

In addition to the modifications shown in the 1604-VLZ owner's manual, there are two rather lovely and optional mods for the signal routing of Aux 3/4 and 5/6.

#### **UL Warning**

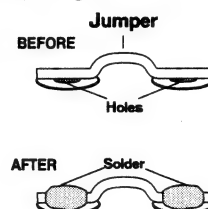
**CAUTION!** These modification instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than changing the fuse unless you are qualified to do so. Refer all servicing and modifying to qualified personnel.

#### **Mackie Disclaimer**

Any modification of any Mackie Designs product must be performed by a competent electronic technician. Mackie Designs accepts no responsibility for any damages or injuries caused by any modification, regardless of the source of the modification instructions or the qualifications of the technician performing them. In the case of such damages, Mackie Designs may declare warranty privileges void. **BE CAREFUL!**

#### **About Jumpers**

We recommend solid (non-stranded) insulated wire, 26–28 gauge (wire-wrapping variety). When installing jumpers, do not run their ends through holes in the circuit board. Rather, solder them flat against the desired pad (the flat silver area, possibly with a hole in the middle). Make sure the ends of these flat wires do not extend beyond the pad.



#### **Tools required**

Sharp razor (X-acto) knife, soldering iron, solder, Phillips screwdriver.

#### **Getting ready**

The following must be performed before starting the actual mods.

1. Remove all cords, including the power cable, from the 1604-VLZ.
2. Place the mixer upside-down on a dry, non-marring surface.
3. If you have converted your mixer to the rack-mount position or have installed a RotoPod, undo those changes and temporarily configure the mixer in the original desktop mode. You do not have to install the pod, just get it out of the way of the bottom cover.
4. Remove the screws that attach the bottom cover. Keep track of what screws go where. Remove the bottom cover and have at the mods shown on sheet 2.
5. When you have finished the mods, put it all back together and retest all functions for correct operation, making especially sure that all modified channels are working correctly.

To make Aux 3/5 and Aux4/6  
Pre-EQ and Pre-Fader

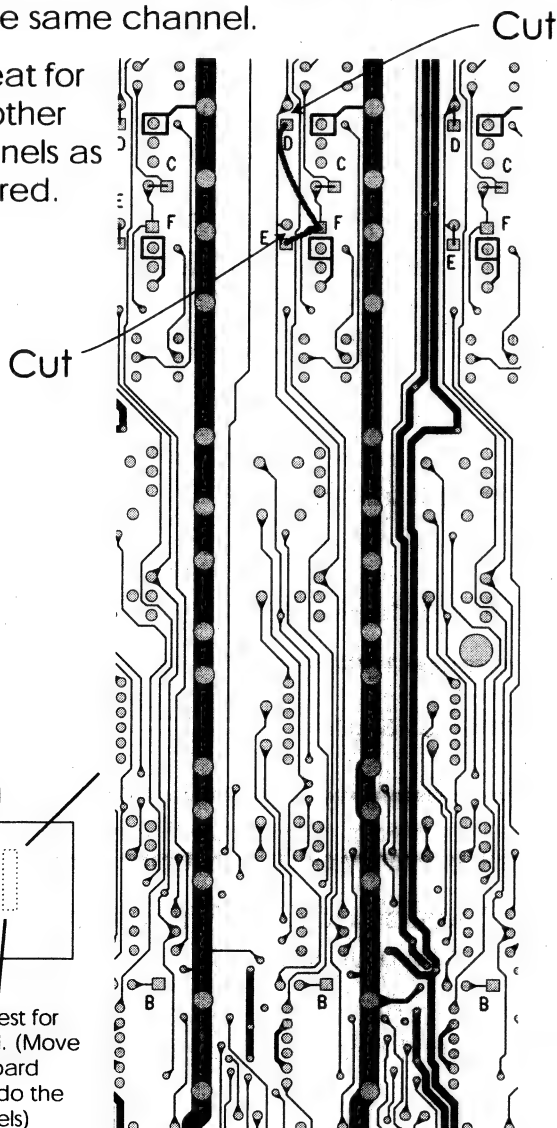
### Aux 3/5

1. Cut the trace between the round and square pads at point **D** on the channel to be modified.
2. Solder an insulated jumper wire from the square pad at **D** to the square pad at **F** on the same channel.
3. Repeat for other channels as required.

### Aux 4/6

1. Cut the trace between the round and square pads at point **E** on the channel to be modified.
2. Solder an insulated jumper wire from the square pad at **E** to the square pad at **F** on the same channel.

3. Repeat for any other channels as required.



To make Aux 3/5 and Aux4/6  
Post-EQ and Pre-Fader

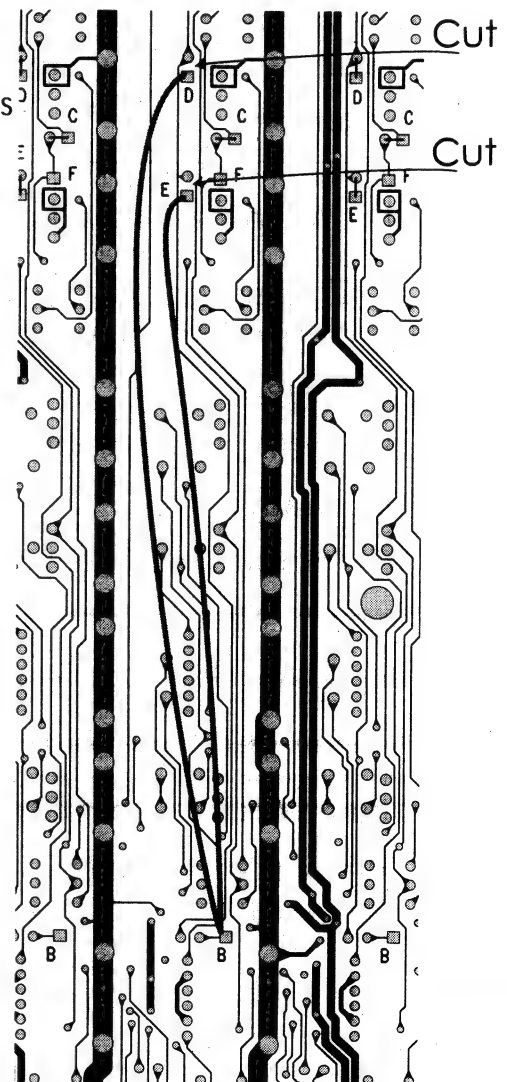
### Aux 3/5

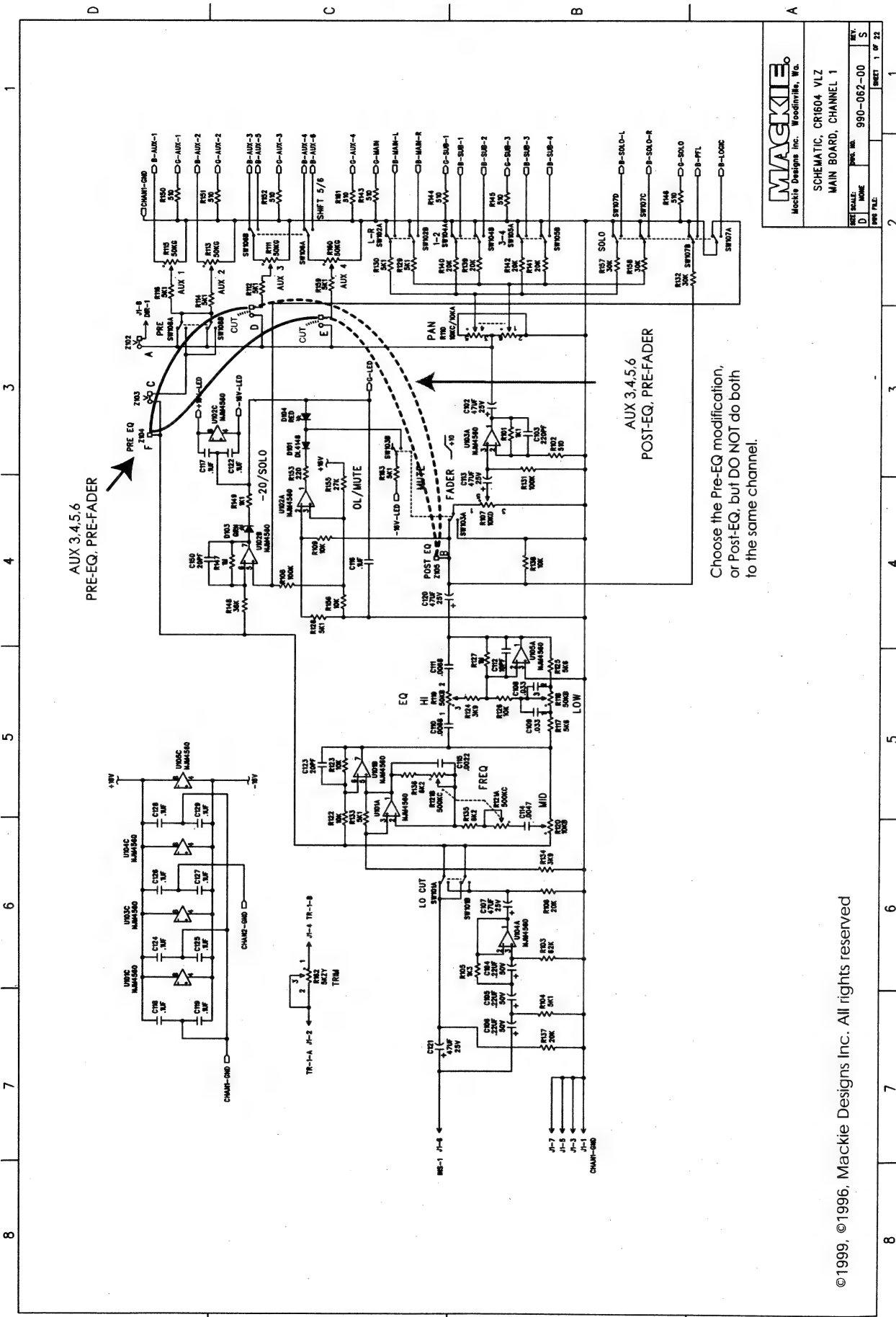
1. Cut the trace between the round and square pads at point **D** on the channel to be modified.
2. Solder an insulated jumper wire from the square pad at **D** to the square pad at **B** on the same channel.
3. Repeat for other channels as required.

### Aux 4/6

1. Cut the trace between the round and square pads at point **E** on the channel to be modified.
2. Solder an insulated jumper wire from the square pad at **E** to the square pad at **B** on the same channel.

3. Repeat for any other channels as required.





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Mackie Designs Inc. Woodville, Wc.

SCHEMATIC, CR1604-VLZ  
MAIN BOARD, CHANNEL 1

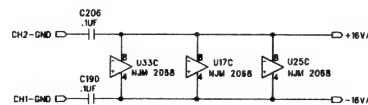
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D	NAME	FILE	SHEET
			1 OF 22


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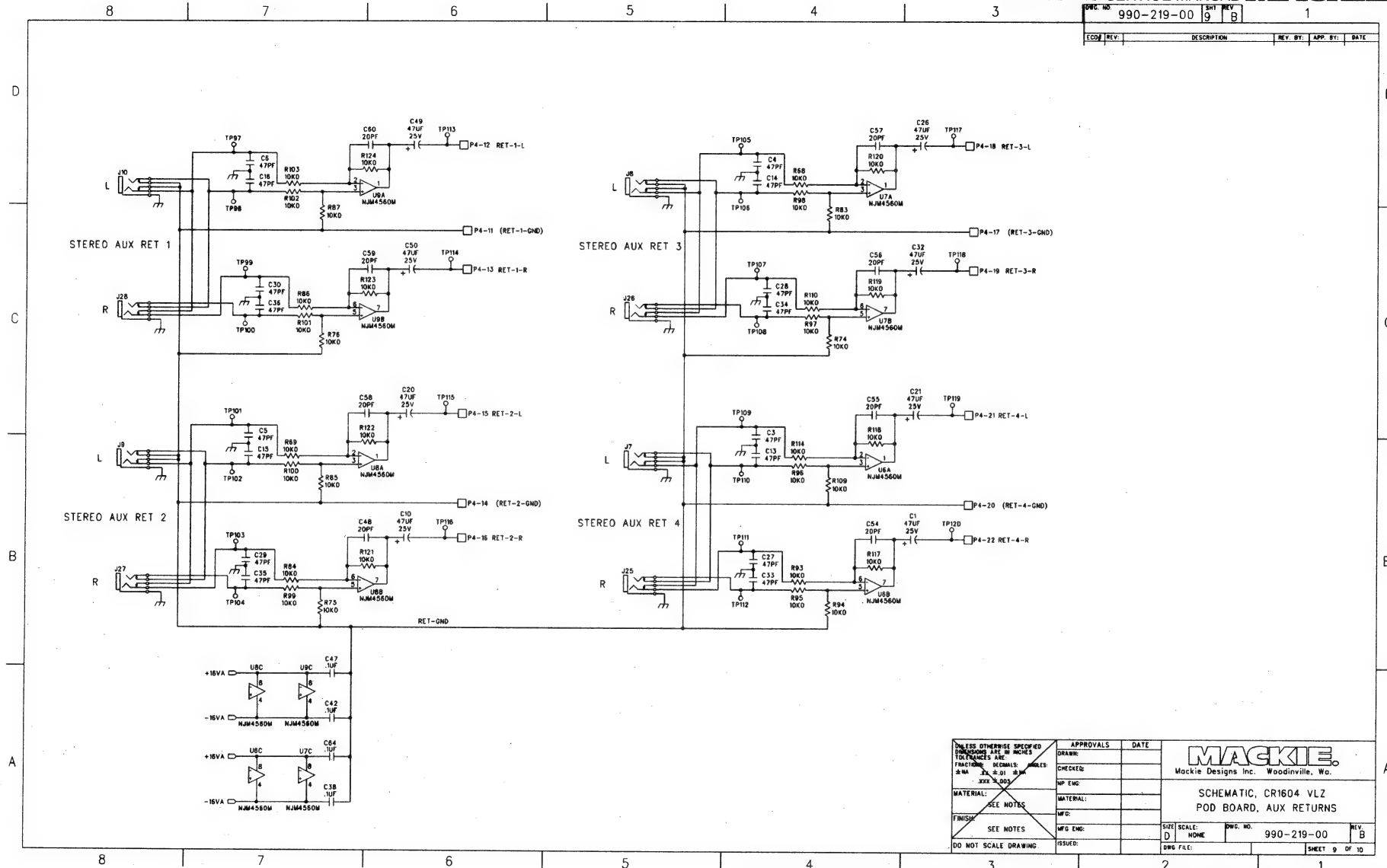
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**REV 12-3-1998**

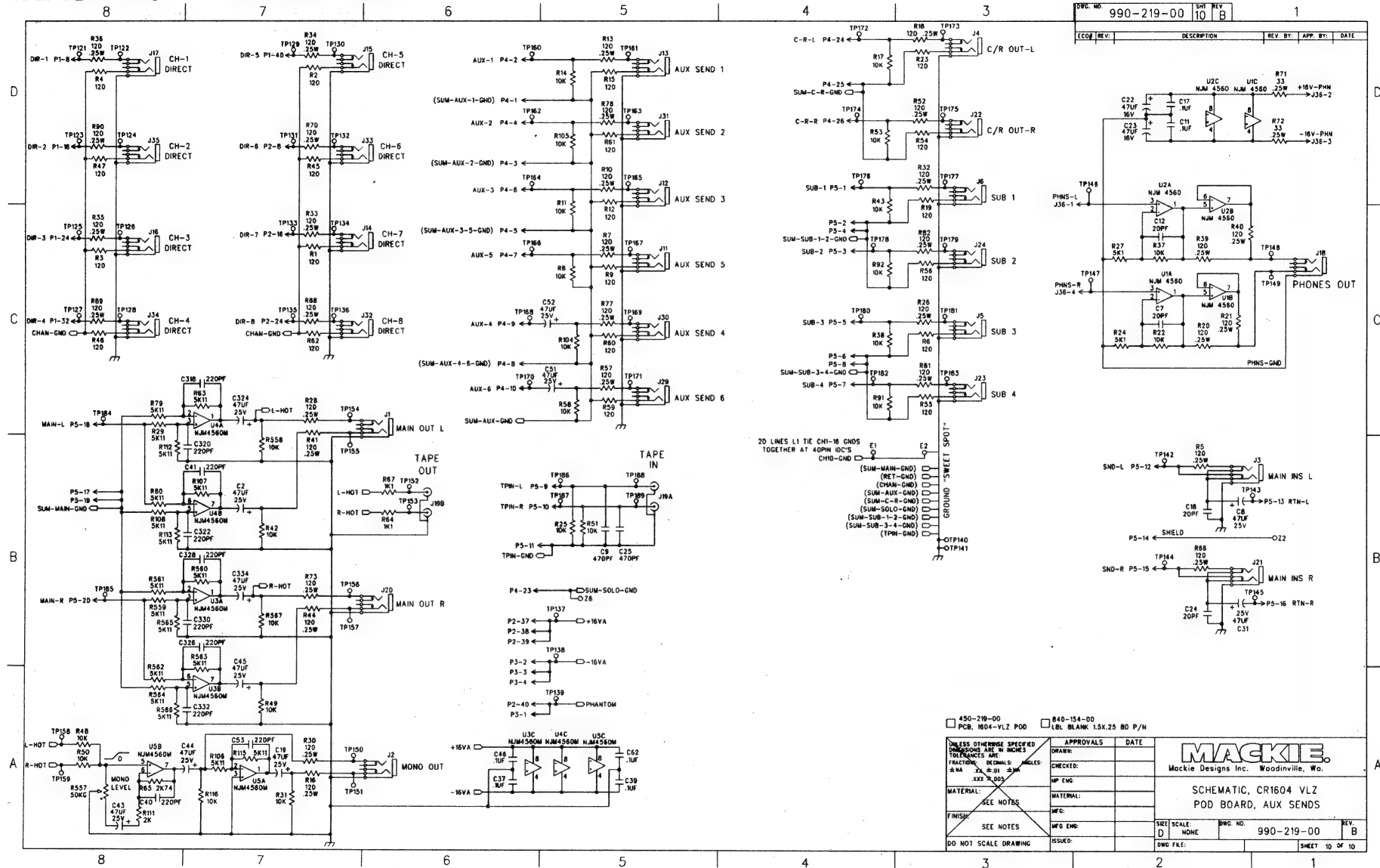
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	2180	MOVE CHOKES							



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MATERIAL: SEE NOTES FINISH: SEE NOTES		MFG. ENG:		SCHEMATIC, CR1604 VLZ POD. CH 1/2	
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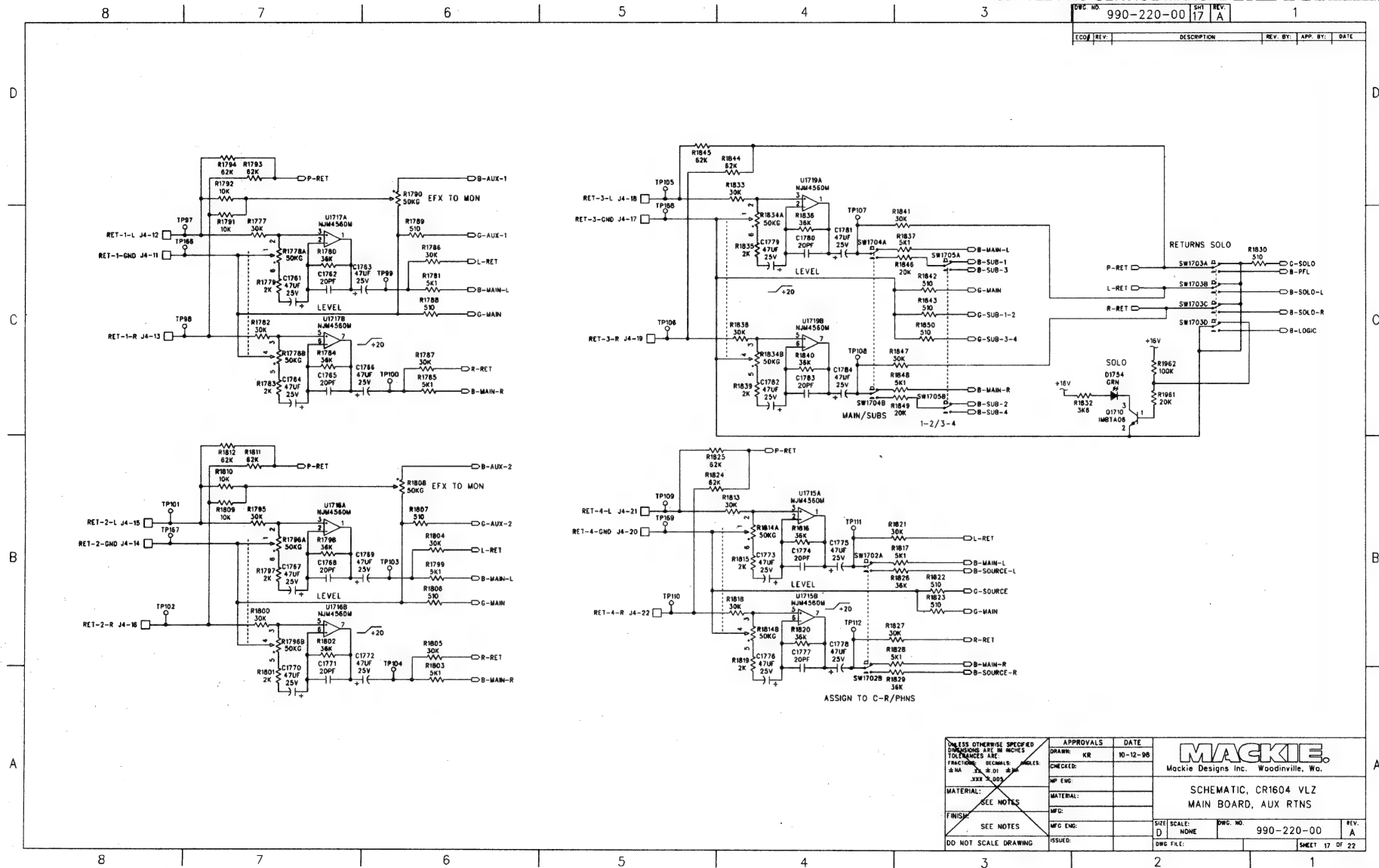


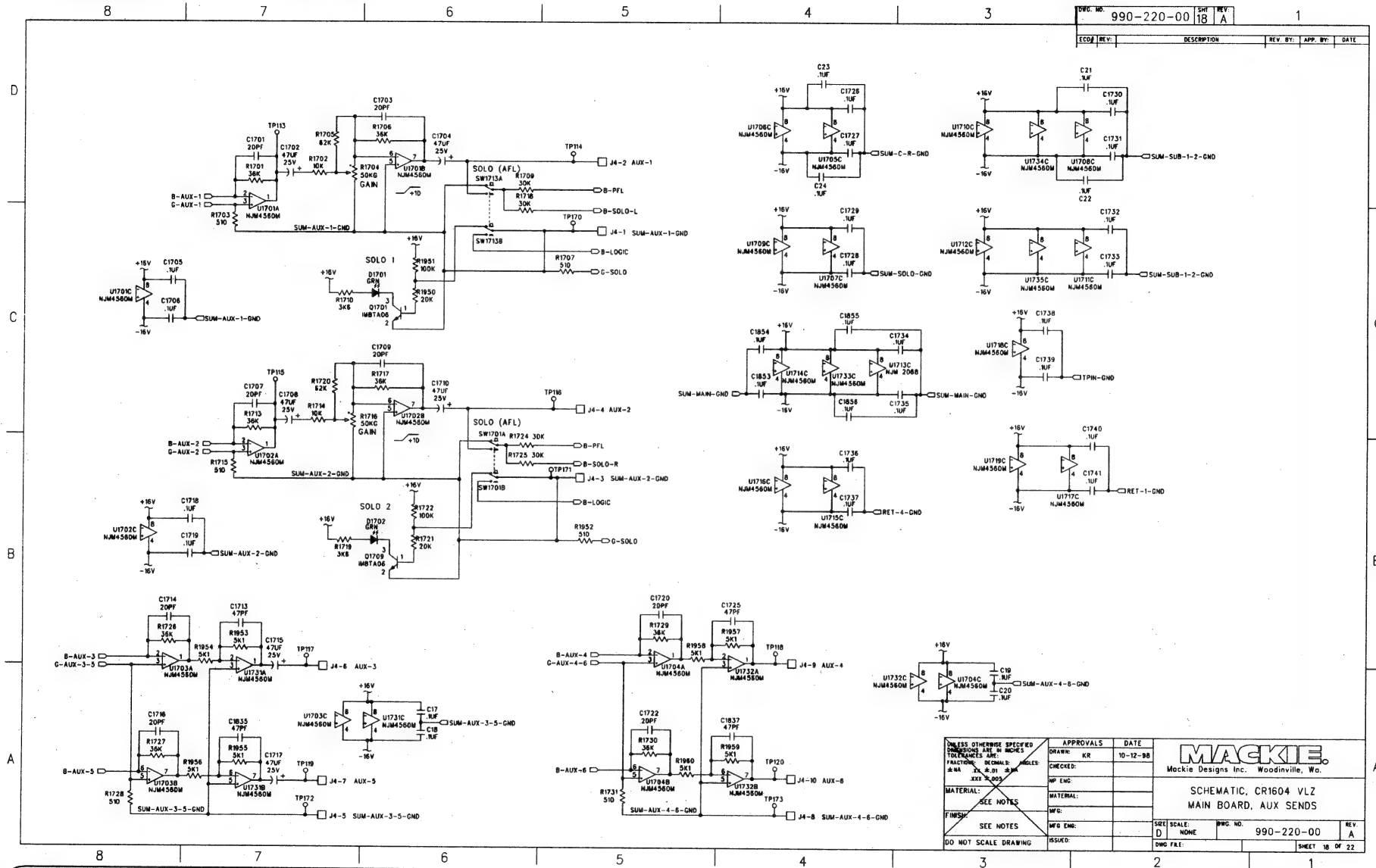


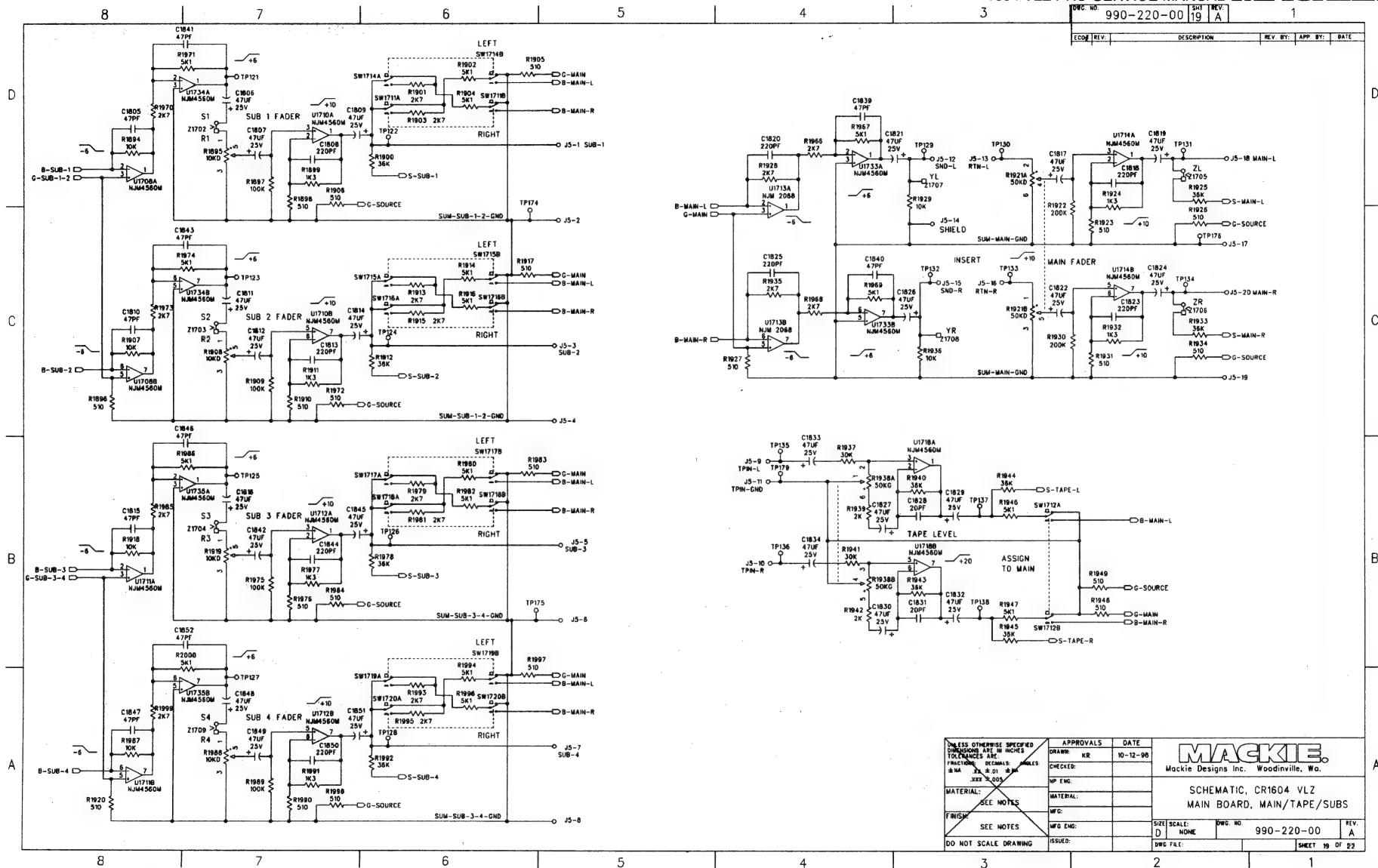
219-3

POD BOARD 219 REV B

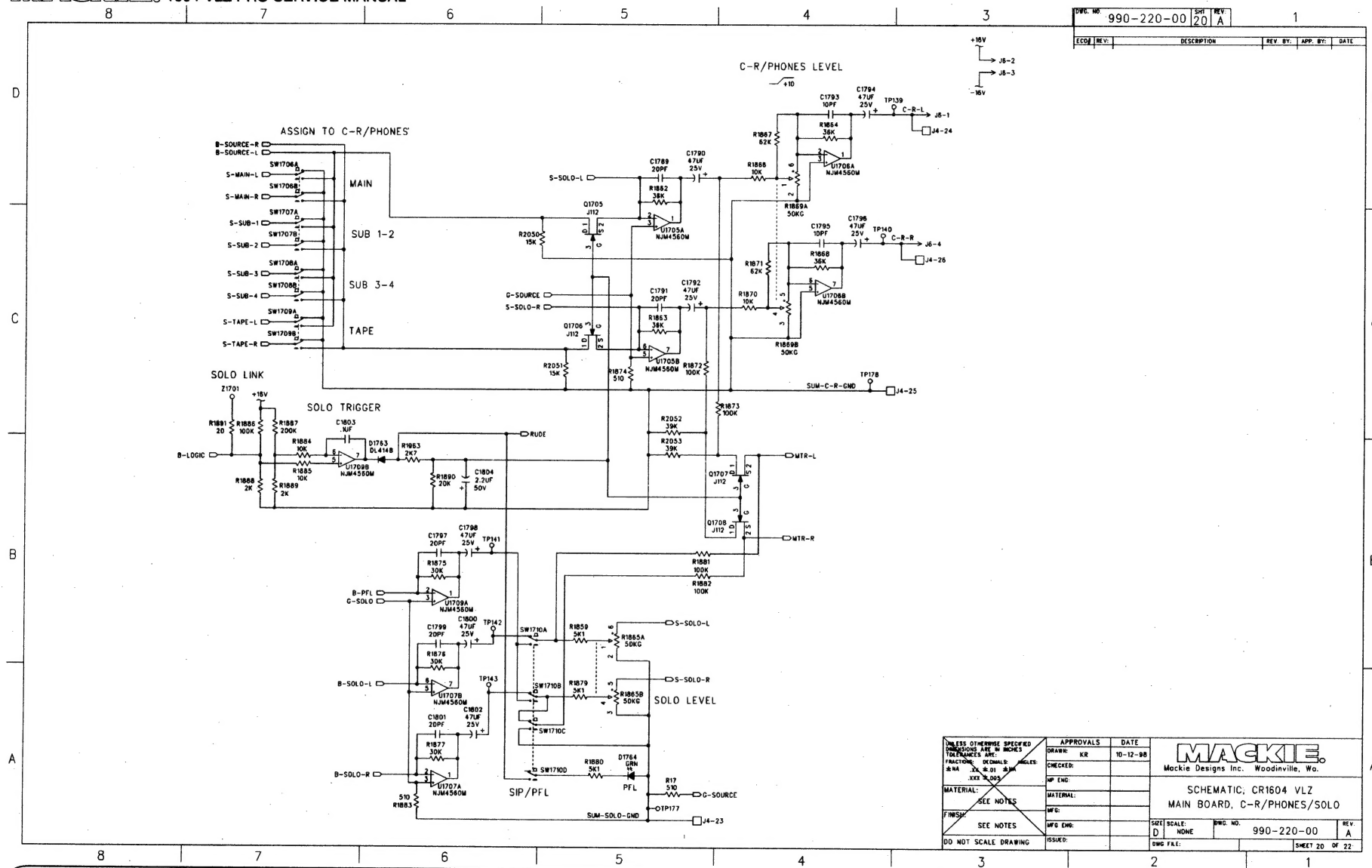
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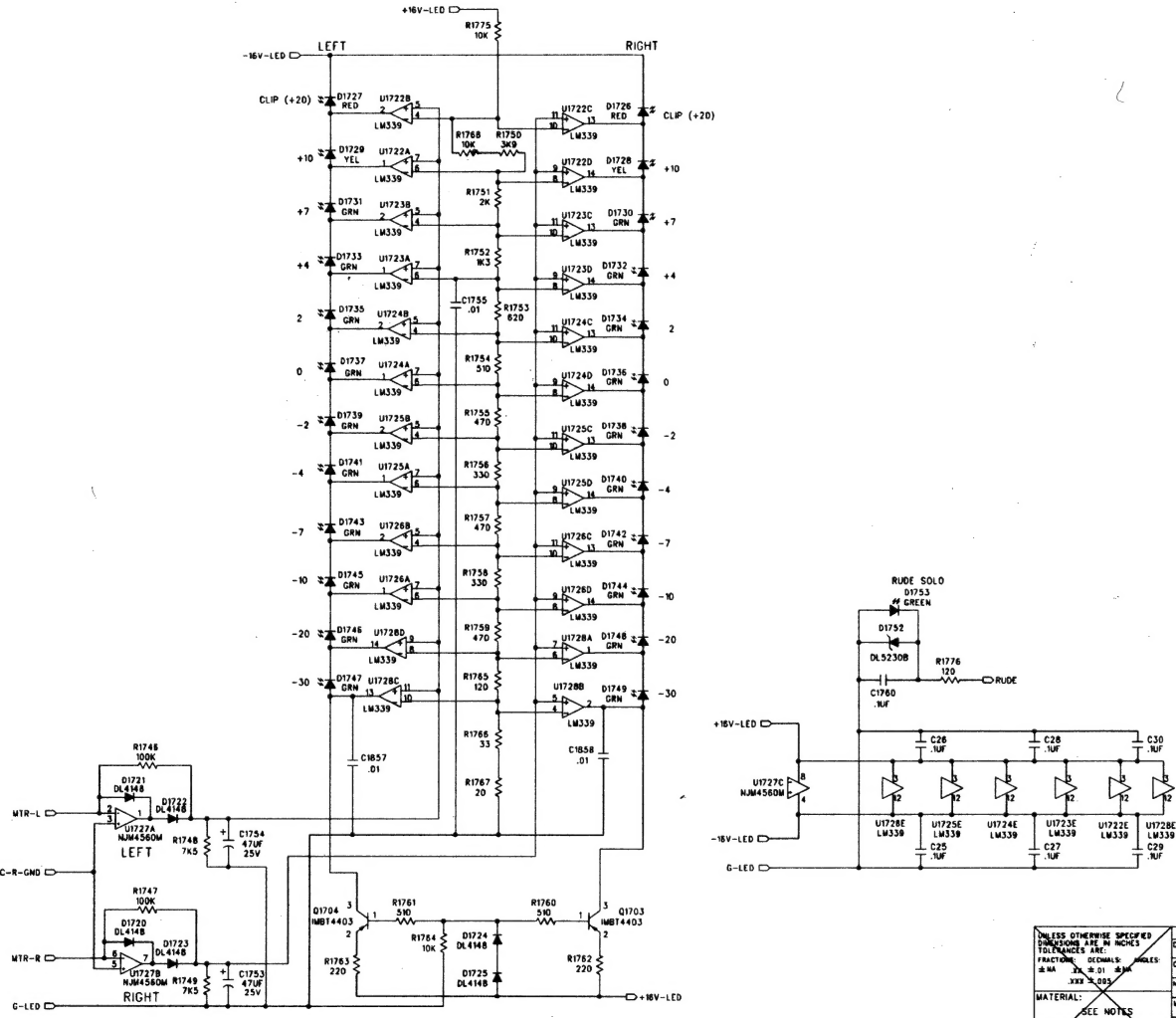






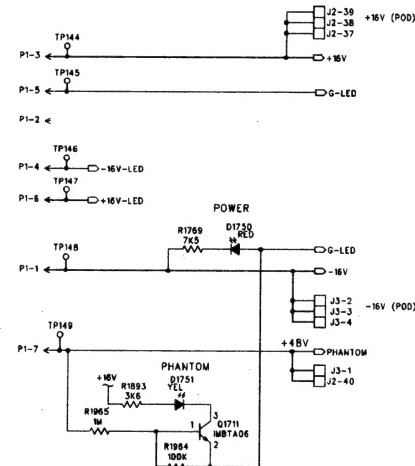
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DO NOT SCALE DRAWING		SHEET 19 OF 23	





## QUANTITY

- 20 ☐ 706-033-02 STD. SWAGE NO.4 X .555L F
- 132 ☐ 760-107-00 BTM 2 COLOR 9X5MM
- 16 ☐ 760-108-00 BTM 2 COLOR 9X5MM
- 1 ☐ 706-009-00 SPACER, NYLON, LED .385
- 1 ☐ 620-023-00 FLAT CBL 4 PIN 3.5"
- 1 ☐ 450-220-00 PCB, 1604 VLZ-MAIN



UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
FRACTIONS DECIMALS  
INCHES MILLIMETERS  
XXX.XXX  
SEE NOTES  
DO NOT SCALE DRAWING

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CHECKED:  
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MATERIAL:  
MFG:  
MFG ENG:  
ISSUED:

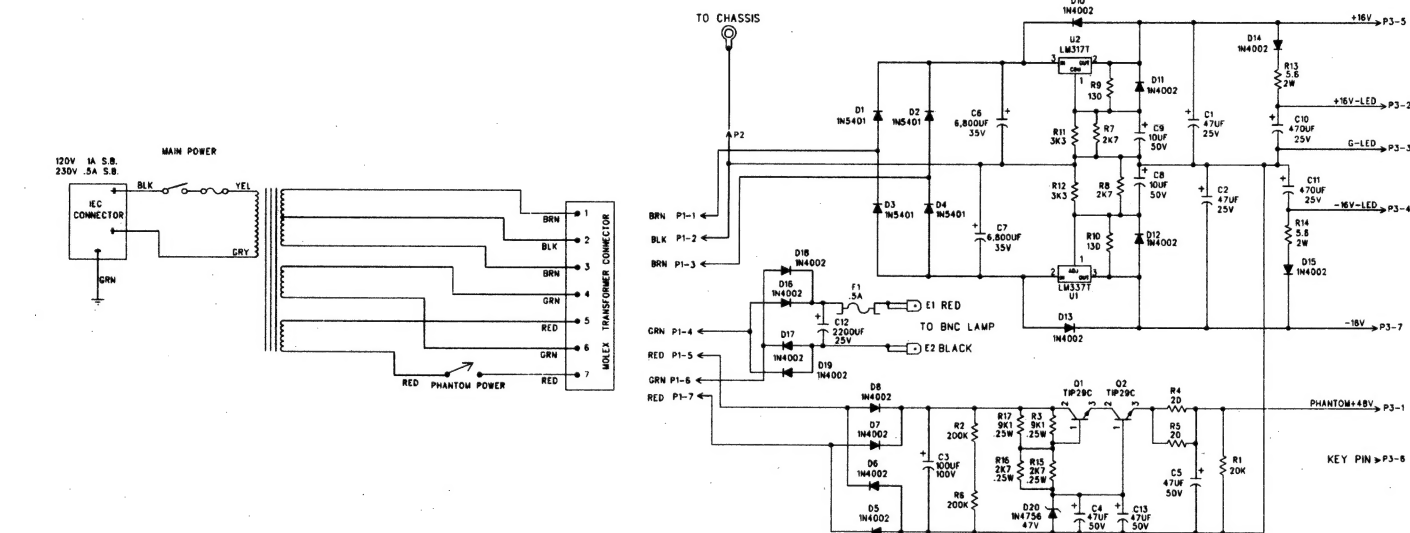
DATE  
10-12-98  
MACKIE.  
Mackie Designs Inc. Woodinville, Wa.  
SCHEMATIC, CR1604 VLZ  
POWER SUPPLY  
SHEET 22 OF 22

220-7

MAIN BOARD 220 REV A



REV. NO.	990-249-00	SHT	REV	1	A	1
REV.	ECV	DESCRIPTION	REV. BY	APP. BY	DATE	



- 400-040-00 FUSE CLIP PCMT
- 400-060-00 FUSE CLIP PCMT
- 450-249-00 PCB, 1604 VLZ II POWER SUPPLY
- 708-008-00 STANDOFF, SWAGE 4-40 X .34
- 708-008-00 STANDOFF, SWAGE 4-40 X .34

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	MP ENG:		
FINISH: SEE NOTES	MFG:		
DO NOT SCALE DRAWING	MFG ENG:		
	ISSUED:		
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	DWG. FILE:		SHEET 1 OF 1